# ZCR

Mettre photos avec un signal en temps

MFCCs

Juste expliquer ce que ca fait, et voir s’il y a des choses à plotter mais je ne pense pas

Plotter le periodogramm e

# Gaussian Mixture Model

Plotter les différents trucs

Plotter les peaks

# Linear Predictive Coding (LPC)

Qu’est ce que ça fait : [httpn ://www.clillac-arp.univ-paris-diderot.fr/\_media/groupes/arp/05\_spectre\_lpc.pdf](http://www.clillac-arp.univ-paris-diderot.fr/_media/groupes/arp/05_spectre_lpc.pdf)

<http://www.ivoronline.com/Science/Signals/LPC%20-%20Linear%20Predictive%20Coefficients/LPC%20-%20Linear%20Predictive%20Coefficients.pdf>

Je sais pas trop ce qu’il y a a afficher avec ca

# Line Spectral Frequencies (LSF)

Idem

# Spectral centroid

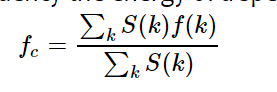
<https://pdfs.semanticscholar.org/08d3/677361238990860fb529eb4fa006534e0f05.pdf>

The spectral centroid is commonly associated with the measure of the brightness of a sound. This measure is obtained by evaluating the “center of gravity” using the Fourier transform’s frequency and magnitude information. The individual centroid of a spectral frame is defined as the average frequency weighted by amplitudes, divided by the sum of the amplitudes, or:



Here, F [k] is the amplitude corresponding to bin k in DFT spectrum.

The **spectral centroid** ([Wikipedia](https://en.wikipedia.org/wiki/Spectral_centroid)) indicates at which frequency the energy of a spectrum is centered upon. This is like a weighted mean:



where S(k)S(k) is the spectral magnitude at frequency bin kk, f(k)f(k) is the frequency at bin kk.

The spectral centroid is a measure that indicates where the "center of mass" of the spectrum is. Perceptually, it has a robust connection with the impression of "brightness" of a sound, and therefore is used to characterise musical timbre. It is calculated as the weighted mean of the frequencies present in the signal, with their magnitudes as the weights.

Note: - For a spectral centroid [hz], frequency range should be equal to samplerate/2